## Holt McDougal
## *Algebra 2,* Algebra II

**Degree of Evidence regarding the Standards for Mathematical Practice:**

## Minimal evidence

**Summary of evidence:**

1. **Make sense of problems and persevere in solving them**. In the chapters reviewed, there are few open-ended problems. Students are typically directed in how they should solve a particular problem, and are then asked to replicate the process in the practice problems. There is some opportunity to explain, plan, and analyze in the "Think and Discuss" portions for each chapter section, but these opportunities could be easily skipped or missed. There is no opportunity for reflection on answers inherent in the student resource or mentioned in the teacher resource, aside from the occasional error analysis which the teacher could assign to students to complete. Overall, there are infrequent and limited open-ended problem-solving opportunities for students to tackle on their own. Most problems guide students in exactly how to reach the desired answer. There is very limited opportunity for students to create a problem-solving plan and follow through or determine reasonableness. Motivation for students to discover the concepts on their own is limited, because the formula is just presented to them as the rule to use.
2. **Reason abstractly and quantitatively**. There are some application problems ingrained in each chapter. In the chapters reviewed, students are rarely, if ever, asked to create a model for an application aside from the separate Algebra Labs (e.g. p.568). The teacher resource occasionally mentions "encouraging" students to work with a model, but it would be up to the teacher to implement. There is not much connection between applications and representations using symbols. Often, symbols just appear in formulas. The "Student-to-Student" sections do allow for some explanation of units and symbols (e.g. p.491), but these sections could be easily overlooked. Most questions are solved by applying an algorithm that the students have not generalized or formed on their own.
3. **Construct viable arguments and critique the reasoning of others**. In the chapters reviewed, there are limited opportunities for students to explain their reasoning. The "Write About It" and "Critical Thinking" labeled practice problems provide some opportunity for justification; however, problems are mainly focused on arriving at a numerical answer. Only the occasional problem requires an explanation or description. In the chapters reviewed, there was little mention of students sharing their methods with the class aside from in the teacher resource. Explanations and discussion of justification are very limited in the chapters reviewed. There are some "Critical Thinking" problems included in student practice that the teacher could use to foster student analysis and justification, as well as the journal prompts given in the teacher resource. Overall, there are limited opportunities for students to justify their thinking, and when they do exist, they may be skipped due to infrequency or the fact that they are not in the practice exercises. Opportunities will rely on teacher facilitation of the activities and practice problems.
4. **Model with Mathematics**. In the chapters reviewed, students are rarely directed to create a model, unless students are completing one of the labs. In the application questions, answers are in context. There is some connection among tables, graphs, equations, and situations in the chapters reviewed. Students have some opportunity to work with tables and equations in the labs, more extensively in the technology labs, but these could be skipped because they are separate from the section lessons. The applications are more in the form of a closed word problem rather than being open-ended. Overall, there are some opportunities for students to create mathematical models, but these opportunities depend on teacher implementation and the incorporation of the various

labs, which are few. For example, in Chapter 7, only two labs are presented over the course of eight sections. Students are presented with how the book details they should solve a problem, and then they are tasked with practicing the use of the prescribed algorithm.

5. **Use appropriate tools strategically.** In the chapters reviewed, students are asked to primarily use the graphing calculator to complete practice problems. The separate technology labs also incorporate the use of the graphing calculator as a tool for explorations. It would be up to the teacher to include these labs in the course to help students grapple with various tools. Other tools do not seem to be incorporated in the text, resulting in no opportunity to discuss the strengths and weakness of particular tools based on a specific scenario. Overall, technology use is primarily separated out from the practice problems in the student resource and would be up to the teacher to implement. In the chapters reviewed, there was little evidence of evaluating the strengths and weaknesses of tools.
6. **Attend to precision.** Examples use proper notation and are precise. Students are asked to conduct error analysis and to explain misconceptions through interspersed practice problems (e.g. p.503). In the chapters reviewed, examples of precise communication are not present. Students are given some opportunities to share and discuss their responses, but this is only mentioned in the teacher resource on few occasions. It would be up to the teacher to include activities that promote communications. Overall, there is attention to precision in the examples but no discussion for students to tackle. The fostering of precise communication would rely on teacher facilitation of student activities presented in the teacher resource or in the labs.
7. **Look for and make use of structure**. In the chapters reviewed, there are few to no opportunities for students to look at examples and then generalize. The text follows the pattern of giving students the formula, showing some examples using the formula, and then providing practice problems for students to complete on their own using the formula. The rule is always given and then worked-out examples follow in each section. The problems the students then practice on their own are primarily exact copies of the pre-worked examples. The student resource contains very few activities for students to explore patterns to create generalizations. There are opportunities to connect to prior learning in the sections titled "Connecting Algebra to…" (e.g. p.618). The teacher resource sometimes suggests cooperative learning groups to reach all learners (e.g. p.593), but overall the text does not lend itself to immediately implement group work. It would be up to the teacher to include and implement such opportunities. Overall, there is limited to no connection to prior learning. In the chapters reviewed, there are some opportunities for students to generalize their thoughts in the Think and Discuss sections, but this is primarily only after the text has told them the algorithm or rule without any discovery.
8. **Look for and express regularity in repeated reasoning.** In the chapters reviewed, students are rarely, if ever, asked to look at patterns and generalize on their own. Most of the time, the book shows them the pattern and then provides the formula. There are some Algebra Labs interspersed in the chapters which guide students to analyze and generalize their findings. Since the labs are not ingrained in the section examples themselves, they could be skipped. It would be up to the teacher to take the time to implement these activities, which are few. Overall, there are few to no opportunities for students to generalize a pattern to determine a rule. Opportunities to meet this standard would depend on the teacher taking the initiative to incorporate it into the course.